

CLAIMS

1. A optical system comprising:
an optical transmitter configured to transmit
5 information over at least one channel, each channel being
at a different wavelength;
an optical filter including a band filter configured
to filter at least one optical channel and a periodic
filter configured to receive, filter, and shape the at
10 least one optical channel from said band filter and provide
a single filtered, shaped optical channel; and,
an optical receiver configured to receive at least
single filtered shaped optical channel.
2. The system of claim 1, wherein said band filter
15 is tunable over at least a portion of the optical system
wavelength spectrum.
3. The system of claim 1, wherein said band filter
includes at least one of fiber Bragg gratings, Fabry-Perot
filters and thin film filters.
- 20 4. The system of claim 1, wherein said periodic
filter includes at least one of Mach-Zehnder and Michelson
interferometric filters.
5. The system of claim 1, wherein said periodic
filter includes at least one Mach-Zehnder filter.
- 25 6. The system of claim 1, wherein said band filter
is a tunable Fabry-Perot filter and said periodic filter is
Mach-Zehnder filter.
7. The system of claim 6, wherein said periodic
filter is a double pass Mach-Zehnder filter.

8. The system of claim 1, wherein:

said optical transmitter is configured to transmit information over two channels, each channel being at a different wavelength;

5 two of said optical filters, each including a band filter configured to filter at least one optical channel and a periodic filter configured to receive the at least one optical channel from said band filter and provide a single filtered optical channel and shape the bandwidth of
10 the single filtered, shaped optical channel; and,

said optical receiver is configured to receive and convert the two filtered, shaped optical channels into electrical signals and combined the two electrical signals into one electrical signal.

15 9. The system of claim 1, wherein:

said optical transmitter is one of a plurality of optical transmitter, each configured to transmit information over two channels, each channel being at a different wavelength;

20 said optical filter is one of a plurality of optical filters, each including a band filter configured to filter at least one optical channel and a periodic filter configured to receive the at least one optical channel from said band filter and provide a single filtered optical
25 channel and shape the bandwidth of the single filtered, shaped optical channel; and,

said optical receiver is one of a plurality of optical receivers, each configured to receive and convert the two filtered, shaped optical channels into electrical signals
30 and combined the two electrical signals into one electrical signal from at least one of said optical filters.

10. An optical receiver comprising:
an optical filter including a band filter configured to filter at least one optical channel and a periodic filter configured to receive, filter, and shape the at
5 least one optical channel from said band filter and provide a single filtered, shaped optical channel; and,
a photodiode configured to receive the single filtered, shaped optical channel and convert it into an electrical signal.

10 11. A method of receiving an optical signal comprising:
providing an optical filter including a band filter configured to filter at least one optical channel and a periodic filter configured to receive, filter, and shape
15 the at least one optical channel from said band filter and provide a single filtered, shaped optical channel; and,
converting the single filtered optical channel and convert it into an electrical signal.

20 12. The system of claim 11, wherein said converting includes converting the single filtered optical channel and convert it into a single electrical signal channel.

25 13. The system of claim 12, wherein said converting includes converting the single filtered optical channel and convert it into a single electrical signal channel and combining the single electrical signal channel with another electrical signal channel.